

EXHIBIT I

Claim 10	Public Documentation
	<p>As a further and/or alternative example, the Accused Instrumentalities perform radio resource management and related functions, including respective quality determinations for each frequency resource within the NR air interface used by the base station for uplink and/or down-link to support Bandwidth Adaptation:</p> <p>7 <u>RRC</u></p> <p>7.1 <u>Services and Functions</u></p> <p>The main services and functions of the RRC sublayer include:</p> <ul style="list-style-type: none"> - Broadcast of System Information related to AS and NAS; - Paging initiated by 5GC or NG-RAN; - <u>Establishment, maintenance and release of an RRC connection between the UE and NG-RAN including:</u> <ul style="list-style-type: none"> - Addition, modification and release of carrier aggregation; - Addition, modification and release of Dual Connectivity in NR or between E-UTRA and NR. - Security functions including key management; - <u>Establishment, configuration, maintenance and release of Signalling Radio Bearers (SRBs) and Data Radio Bearers (DRBs);</u> - Mobility functions including: <ul style="list-style-type: none"> - Handover and context transfer; - UE cell selection and reselection and control of cell selection and reselection; - Inter-RAT mobility. - <u>QoS management functions;</u> - UE measurement reporting and control of the reporting; - Detection of and recovery from radio link failure; <p>(3GPP TS 38.300 v17.2.0, § 7.1)</p>

B.1 Supplementary Uplink

To improve UL coverage for high frequency scenarios, SUL can be configured (see TS 38.101 [18]). With SUL, the UE is configured with 2 ULs for one DL of the same cell as depicted on Figure B.1-1 below:

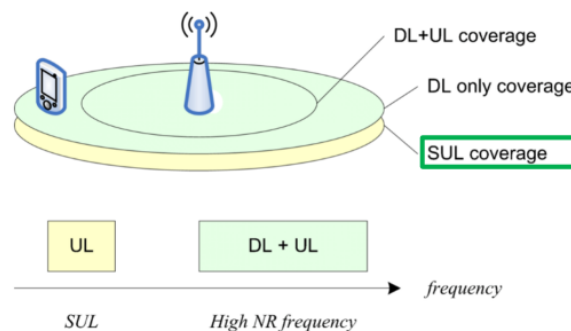


Figure B.1-1: Example of Supplementary Uplink

(3GPP TS 38.300 V2.0.0 (2017-12), § B.1).

7.7 Carrier Aggregation

When CA is configured, the UE only has one RRC connection with the network. At RRC connection establishment/re-establishment/handover, one serving cell provides the NAS mobility information, and at RRC connection re-establishment/handover, one serving cell provides the security input. This cell is referred to as the Primary Cell (PCell). Depending on UE capabilities, Secondary Cells (SCells) can be configured to form together with the PCell a set of serving cells. The configured set of serving cells for a UE therefore always consists of one PCell and one or more SCells.

The reconfiguration, addition and removal of SCells can be performed by RRC. At intra-NR handover, RRC can also add, remove, or reconfigure SCells for usage with the target PCell. When adding a new SCell, dedicated RRC signalling is used for sending all required system information of the SCell i.e. while in connected mode, UEs need not acquire broadcast system information directly from the SCells.

(3GPP TS 38.300 V2.0.0 (2017-12), § 7.7).

As a further and/or alternative example, the first frequency spectrum resource may be a bandwidth part:

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	<p>7 RRC</p> <p>7.1 Services and Functions</p> <p>The main services and functions of the RRC sublayer include:</p> <ul style="list-style-type: none"> - Broadcast of System Information related to AS and NAS; - Paging initiated by 5GC or NG-RAN; - Establishment, maintenance and release of an RRC connection between the UE and NG-RAN including: <ul style="list-style-type: none"> - Addition, modification and release of carrier aggregation; - Addition, modification and release of Dual Connectivity in NR or between E-UTRA and NR. - Security functions including key management; - Establishment, configuration, maintenance and release of Signalling Radio Bearers (SRBs) and Data Radio Bearers (DRBs); - Mobility functions including: <ul style="list-style-type: none"> - Handover and context transfer; - UE cell selection and reselection and control of cell selection and reselection; - Inter-RAT mobility. - QoS management functions; - UE measurement reporting and control of the reporting; - Detection of and recovery from radio link failure; <p>(3GPP TS 38.300 v17.2.0, § 7.1)</p>

Claim 17

Public Documentation

B.1 Supplementary Uplink

To improve UL coverage for high frequency scenarios, SUL can be configured (see TS 38.101 [18]). With SUL, the UE is configured with 2 ULs for one DL of the same cell as depicted on Figure B.1-1 below:

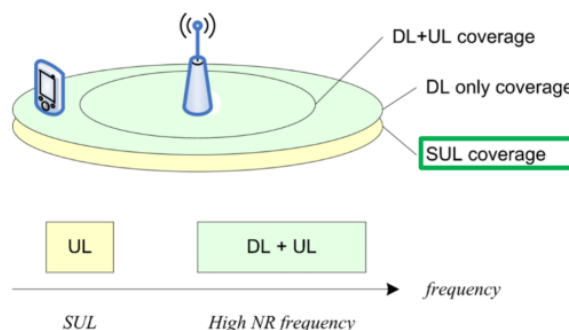


Figure B.1-1: Example of Supplementary Uplink

(3GPP TS 38.300 V2.0.0 (2017-12), § B.1).

7.7 Carrier Aggregation

When CA is configured, the UE only has one RRC connection with the network. At RRC connection establishment/re-establishment/handover, one serving cell provides the NAS mobility information, and at RRC connection re-establishment/handover, one serving cell provides the security input. This cell is referred to as the Primary Cell (PCell). Depending on UE capabilities, Secondary Cells (SCells) can be configured to form together with the PCell a set of serving cells. The configured set of serving cells for a UE therefore always consists of one PCell and one or more SCells.

The reconfiguration, addition and removal of SCells can be performed by RRC. At intra-NR handover, RRC can also add, remove, or reconfigure SCells for usage with the target PCell. When adding a new SCell, dedicated RRC signalling is used for sending all required system information of the SCell i.e. while in connected mode, UEs need not acquire broadcast system information directly from the SCells.

(3GPP TS 38.300 V2.0.0 (2017-12), § 7.7).

As a further and/or alternative example, the first frequency spectrum resource may be a bandwidth part:

Claim 17	Public Documentation
	<p data-bbox="548 235 1087 280">5.4.2 Supplementary Uplink</p> <p data-bbox="548 305 1879 431">In conjunction with a UL/DL carrier pair (FDD band) or a bidirectional carrier (TDD band), a UE may be configured with additional, Supplementary Uplink (SUL). SUL differs from the aggregated uplink in that the UE may be scheduled to transmit either on the supplementary uplink or on the uplink of the carrier being supplemented, but not on both at the same time.</p> <p data-bbox="548 435 1018 464">(3GPP TS 38.300 V2.0.0 (2017-12), § 5.4.2)</p> <p data-bbox="548 495 1598 524">As a further and/or alternative example, the frequency spectrum resources may be bandwidth parts:</p> <p data-bbox="548 555 783 600">7 <u>RRC</u></p> <p data-bbox="548 641 1066 686">7.1 <u>Services and Functions</u></p> <p data-bbox="548 706 1125 735">The main services and functions of the RRC sublayer include:</p> <ul data-bbox="594 751 1598 1409" style="list-style-type: none"> - Broadcast of System Information related to AS and NAS; - Paging initiated by 5GC or NG-RAN; - <u>Establishment, maintenance and release of an RRC connection between the UE and NG-RAN including:</u> <ul style="list-style-type: none"> - Addition, modification and release of carrier aggregation; - Addition, modification and release of Dual Connectivity in NR or between E-UTRA and NR. - Security functions including key management; - <u>Establishment, configuration, maintenance and release of Signalling Radio Bearers (SRBs) and Data Radio Bearers (DRBs);</u> - Mobility functions including: <ul style="list-style-type: none"> - Handover and context transfer; - UE cell selection and reselection and control of cell selection and reselection; - Inter-RAT mobility. - <u>QoS management functions;</u> - UE measurement reporting and control of the reporting; - Detection of and recovery from radio link failure;